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REMARKS

This amendment is responsive to the Office Action dated August 25, 2004.

The amendment corrects a punctuation error in claim 9 and amends claim 10 to define the invention with greater particularity.

Applicant expresses appreciation for the thoroughness of the examination, albeit an examination that selectively picks out individual steps from a number of prior art patents and using hindsight reconstruction combines the steps in an attempt to reconstruct applicant's claimed method. Applicant also appreciates the indication of allowability of claims 11-17.

However, applicant also notes the failure of the Patent Office action to document the status of claim 18, and the apparent lack of completeness in the rejection of claim 10 as obvious over the patents to Oka and Dewa for which clarification is being sought. The foregoing deficiencies are discussed in greater detail later herein.

THE DRAWINGS.

Applicant also presents a replacement sheet of drawing that contains a more formal rendition of Figs. 1, 2 and 6 of the drawing figures as an amendment to the drawings. That amendment to the drawings is presented under cover of a letter to the official draftsman and accompanies this amendment. Entry of the drawing amendment is respectfully requested.

THE REJECTIONS

Claims 1-9 were rejected under 35 U.S.C. 103(a) as unpatentable over Oka, US 6,551,906B2 granted April 22, 2003, (filed Dec. 13, 2000) in view of Dewa, US 6,586,315 B1, in view of Yamamoto US 2002/0178883 A1, in view of McKenna, US 6,248,648 and in view of Matsuda, US 6,281,032 B1. This rejection is respectfully traversed.

With respect to claims 1, 3, 7 and 8, the rejection asserts that Oka teaches a method of parsing a wafer into multiple pieces that includes (a) forming an assembly of (1) the wafer 1, (2) a thermoplastic material 6 and (3) a support surface (elements of applicant's claim 1). Applicant respectfully disagrees with Examiner's observation of

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Oka. Element 6 is not a thermoplastic material, but by inference, the adhesive must be something other than a thermoplastic. At col. 3 lines 63, Oka expressly states that the adhesive 22 of protective tape 2 is a thermoplastic resin. By contrast element 6 is described as a "tape-shaped adhesive 6 for dice bonding" at col. 4, lines 14 and 25. By recognizing thermoplastic in his specification with respect to a different adhesive element, and then refraining from describing adhesive element 6 as a thermoplastic, that, by implication, suggests that Oka does not wish the tape shaped adhesive for dice bonding to be a thermoplastic. That conclusion is reinforced by the description in column 8, lines 49-67 of the Oka patent. That text describes the continuing use of that adhesive (lines 49-54) following the removal of an individual dice, parsed from the assembly, as being used to bond the dice to some other object by die bonding. Hence, that's the reason for the nomenclature of "tape-shaped adhesive 6 for dice bonding." Applicant's conclusion is also borne out by the many descriptions given for handling adhesive 22 presented at lines 55-67 of col. 8 of the patent.

Because of Examiner's incorrect reading of the content of the Oka patent, the entire rejection would appear to be premised on an invalid basis rendering the rejection invalid, and the Oka patent cannot be combined with any other patent to render the claims obvious.

Claim 1 presently recites:

forming a unitary assembly of said wafer, a thermoplastic material, and a support surface, said thermoplastic material adhering to both said wafer and said support surface and said support surface being of a size that covers a side of said wafer;

sawing through said wafer and thermoplastic material in a predetermined pattern in the outline of said multiple pieces to cut said multiple pieces and the thermoplastic material underlying each of said multiple pieces out of said wafer, leaving said multiple pieces individually attached to said support surface by respective pieces of thermoplastic material; and

removing said thermoplastic material, leaving said multiple pieces disposed on said support surface.

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As discussed previously, Oka fails to show or teach the thermoplastic material and the relationship thereof that is recited in applicant's claim 1. Oka also fails to disclose the existence of any thermoplastic material supporting pieces cut from the wafer (as recited in applicant's claim 1) and fails to disclose removing the thermoplastic material, leaving multiple pieces disposed on the support surface.

Examiner concedes that Oka fails to discuss any method of removing any thermoplastic material, but asserts that Dewa teaches the method of removing the thermoplastic material by dissolving, leaving the multiple pieces disposed on the support surface, referencing Figs. 6A-6C and the corresponding text of Dewa. Examiner then concludes that it would have been obvious to use the method of dissolving thermoplastic material (presumably in the method of Oka) as taught by Oka/Dewa "*as is routine in the art.*" Applicant respectfully disagrees with the Examiner's understanding of both the facts and the law.

Applicant submits there's a two-fold reason why Oka fails to discuss any method of removing any thermoplastic material. First, as above discussed, Oka uses an adhesive for element 6, but does not use a thermoplastic material as that adhesive. Examiner's suggestion goes contrary to the teaching of Oka. Second, Oka doesn't wish to remove the adhesive 6, but expressly retains that adhesive to later die bond the die presumably to a circuit board or other electronic substrate. Applicant submits that removing the adhesive 6 in Oka as suggested by Examiner is contrary to the teaching of Oka and, moreover, would render the method of Oka inoperative for Oka's intended purpose.

The Examiner's statement implies that Examiner believes that Oka intends to remove the undisclosed adhesive 6 from the individual piece. He does not. That implication is incorrect and represents a misunderstanding of the Oka patent. Oka uses that adhesive to die bond the piece. See col. 8 lines 49-54 ("*Heat is applied and dice bonding is carried out due to adhesion of the tape-shaped adhesive 6 for dice bonding.*") Also see claim 8, step (i) which states: "*subjecting the separated semiconductor elements to dice bonding by using the tape-shaped adhesive for dice bonding.*"

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Lastly, for purpose of argument, assume that the dice in Oka are attached to a substrate by a thermoplastic, assume further that one wished to remove those die from that substrate, and assuming one were motivated to look to the MEMS art for the method of removing the thermoplastic and came across the patent to Dewa and Figs. 6A-6C thereof. One would immediately recognize that if one were to dip the substrate and attached dies into the acetone in the manner shown by Dewa in the cited figures, and assuming that acetone could dissolve the thermoplastic material, then the dies under the force of gravity would drift down and bunch in a pile formed at the bottom of the vat and NOT remain in place on the support surface, as recited in the claim. That would produce a clump of pieces that would be impractical or impossible to handle, the direct opposite effect desired in handling semiconductor chips and as recited in the claim. Moreover, the skilled person would recognize that acetone, which is used in Dew, doesn't remove thermoplastic. Examiner should refer to applicant's specification for the identification of the proper solvent for the thermoplastic. In short, applicant submits that the skilled person would walk away from Dewa immediately.

For all the foregoing reasons, applicant respectfully submits that claim 1 is not rendered obvious from any combination of Oka and Dewa.

Dependent claims 3, 7 and 8 are directly or indirectly dependent on claim 1 and are believed to be patentable for all the reasons advanced in connection with the discussion of the rejection of claim 1.

Dependent Claim 2 recites parsing a wafer of crystalline material into multiple pieces as defined in claim 1, further comprising the step of directing a stream of coolant fluid onto said wafer during said step of sawing through said wafer and thermoplastic material.

Examiner concedes that neither Oka or Dewa show or teach directing a stream of coolant fluid onto the wafer during sawing. Motivated thusly by applicant's specification and claims, Examiner reaches into some additional prior art and fetches a patent to Yamamoto. Applicant is unable to find any hint, suggestion, unsolved problem or description or anything else in either Oka that might motivate one to look for a source of fluid to include in the method of Oka or Dewa. Applicant understands that in order to combine references in propounding an obviousness type rejection under 35 USC 103,

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the Patent Office must show some teaching, suggestion or motivation in the prior art as would lead one of ordinary skill to the structure and method described in the Yamamoto patent. The Patent Office fails to show any such teaching, suggestion or motivation. Accordingly, applicant thus submits that claim 2 cannot be rendered obvious by a combination of Oka, Dewa and Yamamoto.

Should the Patent Office persist in the rejection, Applicant respectfully requests Examiner to divulge the prior art information that provides such motivation.

Dependent claim 4 describes the method of parsing a wafer of hard crystalline material into multiple pieces defined in claim 1, in which the multiple pieces of said wafer possess an aspect ratio of 2 to 1 or greater.

Claim 9 was not commented upon by Examiner.

Claim 9 recites a method of parsing a wafer of crystalline material into multiple pieces, said crystalline material having a hardness of 8 Mohs or greater and said multiple pieces having said wafer possess an aspect ratio of 2:1 or greater, and recites steps that include "forming a unitary assembly of said wafer, a thermoplastic material, and a support surface, said thermoplastic material adhering to both said wafer and said support surface and said support surface being of a size that covers a side of said wafer; sawing through said wafer and thermoplastic material in a predetermined pattern in the outline of said multiple pieces and simultaneously directing a stream of coolant fluid onto said wafer to cut said multiple pieces and the thermoplastic material underlying each of said multiple pieces out of said wafer, leaving said multiple pieces attached individually attached to said support surface by respective pieces of thermoplastic material; and chemically dissolving said thermoplastic material, leaving said multiple pieces disposed on said support surface; followed by removing the multiple pieces from said support surface.

Applicant refers to the discussion of the rejection of claim 1, which is incorporated herein by reference. For the foregoing reason applicant submits that claim 9 defines patentable subject matter.

The patent law on "obviousness" is clear. One is reminded that, a "person of ordinary skill in the art is presumed to be one who thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate." Standard Oil Co. v.

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American Cyanamide Co., 774 F.2d 448, 445 [227 USPQ 293, 297-298] (Fed. Cir. 1985). And "Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so." ACS Hospital Systems, Inc. v. Montefiore Hospital and Wells National Services Corp., (CAFC 1984), 221 USPQ 929, 732 F.2d 1572.

A prior art reference "must be considered in its entirety, i.e., as a whole, including portions that would lead away from the invention..." It is error to "*focus on isolated minutiae in a prior art patent while disregarding its scope, i.e., its entire disclosure, and how its disclosed structure works*". Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1568, 1574, (1 USPQ2d 1593, 1597, 1602, (Fed. Cir. 1987).

"When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. Something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination." (citations omitted and emphasis added). Uniroyal Inc. v. Rudkin-Wiley, 837 F. 2d 1044, 1051 [5 USPQ2d 1434, 1438] (Fed. Cir. 1988).

The Office's opinion perhaps is implicitly based upon the thought that it is "obvious to try", a test of patentability that has been found unacceptable, and not from any teachings found in the references. See In re Fine, 5 USPQ2d 1596 (Fed. Cir. 1988), which provides additional guidance:

"The Eads and Warnick references disclose, at most, that one skilled in the art might find it obvious to try the claimed invention. But whether a particular combination may be "obvious to try" is not a legitimate test of patentability."

"Obviousness is tested by "what the combined teachings of the references would have suggested to those of ordinary skill in the art."

"But it cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination", citing with approval American Hospital Supply 221 USPQ 931.

"One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention" (at page 1600).

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In Ex-parte Levengood, 28 USPQ2d 1300 (Bd Pat. App & Int 1993), the Board of Patent Appeals and Interferences reversed an Examiner since the references fell short of providing the "motivation" or "suggestion" to assemble the teachings into a viable process. As stated by the Board:

"An examiner cannot establish obviousness by locating references which describe various aspects of a patent applicants invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done." (at page 1302) Emphasis Added.

A more recent decision repeats those admonitions, and more. In In re Rouffet, 47 USPQ2d 1453 (Fed. Cir. 1998), the court states "Where a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references. See In re Geiger, 2 USPQ2d 1276 (Fed. Cir. 1987)" (at p 1456).

(At page 1458) "To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed."

...

...Rather just as it (sic the Board) relied on the high level of skill in the art to overcome the differences between the claimed invention and the selected elements in the references, it relied upon the high level of skill in the art to provide the necessary motivation...If such a rote invocation could suffice to supply a motivation to combine, the more sophisticated scientific fields would rarely, if ever, experience a patentable technical advance"....."To counter the potential weakness in the obviousness construct, the suggestion to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness."

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..."Because the Board did not explain the specific understanding or principle within the knowledge of a skilled artisan that would motivate one with no knowledge of Rouffet's invention to make the combination, this court infers that the examiner selected these references with the assistance of hindsight. This court forbids the use of hindsight in the selection of references that comprise the case of obviousness. See *In re Gorman*, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). Lacking a motivation to combine references, the Board did not show a proper prima facie case of obviousness."

Claim 10 was rejected under 35 U.S.C. 103(a) as unpatentable over Oka in view of Dewa. This rejection is respectfully traversed.

The rejection asserts that Oka teaches a semiconductor chip removal procedure that includes the steps of applying a protective (photoresist) coat over a side of the wafer (to protect the chips), attaching the other side of the wafer to a carrier substrate using thermoplastic material as an adhesive 6; followed by removing the protective coating, the thermoplastic material and individually removing the chips from the carrier.

The Examiner's assertion of fact is incorrect. Oka does not teach that the adhesive 6 is a thermoplastic. In fact, Oka implicitly teaches that the adhesive 6 is not a thermoplastic. Applicant refers to the discussion of Oka presented in connection with the discussion of the rejection of claim 1 and incorporates that discussion herewithin.

Further, Oka does not remove any adhesive 6, whether or not that adhesive is a thermoplastic or not. To the contrary, Oka expressly teaches that the individual pieces (semiconductor chips) are individually removed with the adhesive 6 left in place because that adhesive is later used for die bonding of the chip. Applicant refers to the prior discussion of Oka which is incorporated herein by reference. Examiner incorrectly believes that Oka intends to remove the undisclosed adhesive 6 from the individual piece. That implication is incorrect and represents a misunderstanding of the Oka patent. Oka uses that adhesive to die bond the piece. See col. 8 lines 49-54 of Oka (*"Heat is applied and dice bonding is carried out due to adhesion of the tape-shaped*

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adhesive 6 for dice bonding.") Also see claim 8, step (i) which states: "*subjecting the separated semiconductor elements to dice bonding by using the tape-shaped adhesive for dice bonding.*"

For the forgoing reasons, applicant submits that Oka fails to render claim 10 obvious. Applicant respectfully requests the Patent Office to reconsider and withdraw the rejection of claim 10.

The foregoing rejection fails to cite the relevance of the patent to Dewa and does not discuss how the Dewa disclosure is intended to be applied to modify or otherwise vary the structure of Oka. Should the Patent Office persist in the rejection, Applicant respectfully requests clarification.

The rejection then discusses the asserted teachings of Yamamoto, a patent that is not cited in the rejection of claim 10. Further Yamamoto is described as teaching "the method of the stream of coolant fluid directing onto the wafer during the step of sawing through the wafer and thermoplastic material." However, applicant is unable to determine the relevance of that teaching to the rejection of claim 10, since claim 10 does not recite a stream of coolant fluid. Applicant respectfully requests clarification.

Claim 18 doesn't appear to have been examined, but it is likely that the claim will be included with the objectionable claims, since claim 18 depends from a claim within that group, namely claim 15.

It is believed that the foregoing amendment places the application in condition for allowance. Accordingly, an early notice of allowability is respectfully solicited.

CLAIM SUMMARY

Claims 1-18 were originally in the application as filed and remain in the application for examination. Claims 1-10 stand rejected and Claims 11-17 were objected to as pending from a rejected claim, but would be allowable if rewritten in independent form. Claim 18 depends from a claim within the objectionable group, claim 15.

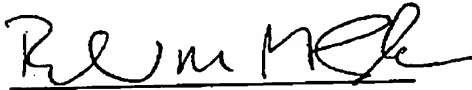
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CLAIM FEE

The number of claims in the application in total remains at 18. The number of claims in independent form also remains unchanged. Accordingly, no additional fee is due.

Respectfully submitted,



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